

Conducting a Pest Assessment for Use of Class 12 Pesticides

ontario.ca/environment

Conducting a Pest Assessment for Use of Class 12 Pesticides

June 2, 2015

PIBS 9839e01

© Queen's Printer for Ontario, 2015

For more information on this report, please contact the
Ontario Ministry of the Environment and Climate Change's
Public Information Centre

Toll free 1-800-565-4923

In the GTA 416-325-4000

TTY 1-800-515-2759

Email picemail.moe@ontario.ca

Website www.ontario.ca/environment

Introduction

As of July 1, 2015, regulatory amendments under the Pesticides Act and Ontario Regulation 63/09 (O. Reg. 63/09) are in effect to reduce the impact that neonicotinoid insecticides have on pollinator health. The regulation includes a new class of pesticides for corn and soybean seeds treated with imidacloprid, thiamethoxam and clothianidin (referred to as Class 12 pesticides).

The regulation provides Class 12 pesticides may be used in accordance with a pest assessment report that confirms a pest threshold or stand loss threshold has been met or exceeded. The thresholds are outlined in this guideline.

The pest assessment referred to as “Inspection of Soil” assists in determining if pests are present above pest thresholds. The pest assessment referred to as “Inspection of Crop” assists in determining if stand loss caused by pests is present above stand loss thresholds. A pest assessment report summarizes relevant information pertaining to the pest assessment that was conducted and is required to purchase and use Class 12 pesticides.

This document, entitled *Conducting a Pest Assessment for Use of Class 12 Pesticides* (“the Guideline”), sets out the methods that must be used to perform a pest assessment for the purpose of section 8.2 of O. Reg. 63/09. A pest assessment that is not performed in accordance with this Guideline will not meet the legal requirements of O. Reg. 63/09.

As set out in paragraph 4 of subsection 8.2 (1) of O. Reg. 63/09, a pest assessment report must include confirmation that either:

- An inspection of the soil was conducted at the farm property in accordance with the Pest Assessment Guideline and the presence of one or more of the pests referred to in the Guideline was detected in each application area mentioned in paragraph 3 in a number that was equal to or greater than the applicable pest threshold.
- An inspection of a crop was conducted at the farm property in accordance with the Pest Assessment Guideline and the inspection detected a stand loss in each application area mentioned in paragraph 3 caused by one or more of the pests referred to in the Guideline that was equal to or greater than the applicable stand loss threshold..

This Guideline sets out:

- certain pests which, if present at a farm property, may permit the use of a Class 12 pesticide;
- the thresholds that must be met with respect to the amount of those pests present or percentage of stand loss caused by those pests in order to use a Class 12 pesticide at the farm property;
- the steps required to be taken to perform a pest assessment by an inspection of soil to determine the presence of those pests (i.e. Method 1);

- the steps required to be taken to perform a pest assessment by an inspection of a crop to determine percentage of stand loss (i.e. Method 2) caused by those pests; and
- the rules to determine the area of land on which Class 12 pesticides may be used if a threshold is met or exceeded (i.e. the application area).

Definitions

In this Guideline,

“bean leaf beetle” means the bean leaf beetle when in its adult life stage;

“corn rootworm” means any of the following species of insects when in their larval life stage:

1. Northern corn rootworm
2. Western corn rootworm;

“grub” means any of the following species of insects when in their larval life stage:

1. European chafer
2. Japanese beetle
3. June beetle;

“Regulation” means Ontario Regulation 63/09 (General) made under the Pesticides Act;

“wireworm” means click beetle when in its larval life stage.

For ease of reference, it is noted that O. Reg. 63/09 provides the following definitions of terms that are used in this Guideline:

“application area” means the land on which a land extermination is performed or intended to be performed;

“farm property” means an area of land used for an agricultural operation, part of an agricultural operation or more than one agricultural operation;

“stand loss” means crop damage, either through failure of plants to emerge or lack of plant vigour, resulting in stunted, damaged or dead plants.

Pests

The presence of one or more of the following pests in an amount that meets or exceeds a pest threshold for that pest may allow the use of a Class 12 pesticide at a farm property:

- grub
- wireworm

Conducting a Pest Assessment for Use of Class 12 Pesticides

Stand loss in a soybean crop in an amount that meets or exceeds the stand loss threshold for soybean crop caused by one or more of the following pests may allow the use of a Class 12 pesticide at a farm property:

- grub
- wireworm
- seedcorn maggot
- bean leaf beetle

Stand loss in a corn crop in an amount that meets or exceeds the stand loss threshold for corn crop caused by one or more of the following pests may allow the use of a Class 12 pesticide at a farm property:

- grub
- wireworm
- corn rootworm
- seedcorn maggot

Thresholds for Use of a Class 12 Pesticide

Pest Thresholds

The pest threshold for grubs is an average of 2 grubs per scouting location averaged over 5 scouting locations.

The pest threshold for wireworms is an average of 1 wireworm per scouting location averaged over 5 scouting locations.

Stand Loss Thresholds

The stand loss threshold for a corn crop is 15 percent.

The stand loss threshold for a soybean crop is 30 percent.

Pest Assessment Method 1 - Inspection of Soil

The objective of Pest Assessment Method 1, inspection of soil, is to determine whether there are grubs or wireworms present at a farm property in a number that meets or exceeds a pest threshold for use of a Class 12 pesticide set out in this Guideline for these pests. The following steps must be taken in order to perform Pest Assessment Method 1:

1. The first step in Pest Assessment Method 1 is to identify the acreage of the farm property on which a Class 12 pesticide is proposed to be used. This area shall be divided into plots not

greater than 100 acres (40.5 ha). For example, if the intention is to use Class 12 pesticides on 250 acres, there will be a minimum of three (3) plots identified.

2. The second step in Pest Assessment Method 1 is to identify, for each plot identified in Step 1, at least five locations in which to scout for grubs or wireworms. Each location must be at least 10 metres away in all directions from any other location in any plot. In the example above, if the area was divided into three plots, at least 15 locations must be identified.
3. The third step in Pest Assessment Method 1 is to perform scouting in each location identified in Step 2. A person shall scout for grubs using the Digging Scouting Technique described below. A person shall scout for wireworms using either (i) the Digging Scouting Technique, or (ii) the Bait Trap Scouting Technique described below.

(i) Digging Scouting Technique

To scout for pests that are grubs or wireworms using the Digging Scouting Technique, a person shall dig a hole with a surface area of approximately 30 cm by 30 cm to a depth of 7 - 10 cm and sift through the soil removed from the hole, breaking up any clumps of soil to observe any grubs or wireworms within the soil and hole. Count and record the number of grubs and wireworms observed in the soil and hole in each of the locations.

(ii) Bait Trap Scouting Technique

To scout for pests that are wireworms using the Bait Trap Scouting Technique, a person shall dig a hole with a surface area of approximately 15 cm by 15 cm to a depth of approximately 15 cm and place approximately 1 cup of bait into the hole. Fill in the hole with soil, breaking up any clumps of soil to cover the bait. Mound the soil to prevent standing water. A person may wish to place a flag at the location of the hole to ensure finding the hole later. Seven to 10 days after preparing the bait trap, dig out the bait to observe any wireworms. Count and record the number of wireworms observed in each of the locations.

The following are examples of things that could be used as bait and are not intended to limit the materials that may be used as bait:

- 1 cup of equal parts of soaked untreated corn seed and untreated wheat seed
- 1 cup of flour
- 1 cup of freshly cut potatoes

4. After the scouting set out in Step 3 is performed at each of the locations identified in Step 2, the fourth step is to calculate the average number of grubs and wireworms per scouting location identified in Step 2.

Conducting a Pest Assessment for Use of Class 12 Pesticides

- To calculate the average number of grubs, add together the number of grubs observed in five scouting locations within an area no greater than 100 acres (40.5 ha) and divide by five.
- To calculate the average number of wireworms, add together the number of wireworms observed in five scouting locations within an area no greater than 100 acres (40.5 ha) and divide by five.

If the average number of grubs or wireworms observed in five scouting locations within an area no greater than 100 acres (40.5 ha) meets or exceeds the pest threshold for that pest set out in this Guideline, a Class 12 pesticide may be used at the farm property in an area that meets the following criteria:

- i. The area does not exceed 100 acres (40.5 ha);
- ii. One assessment roll number applies to all of the land in the area; and
- iii. One of the following pest thresholds are met:
 - (a) the average number of grubs observed in five scouting locations within the area is 2 or greater; or
 - (b) the average number of wireworms observed in five scouting locations within the area is 1 or greater.

An area that meets the above-mentioned criteria may be sketched as an **application area** (i.e. an area of land in or on which a Class 12 pesticide is intended to be used) in a pest assessment report prepared for the purposes of section 8.2 of the Regulation. Please note that although an inspection of soil may have been conducted on a plot as large as 100 acres (40.5 ha), the application area sketched in the pest assessment report if a pest threshold has been met or exceeded may be any size that is less than or equal to 100 acres (40.5 ha) as long as the application area meets the above-mentioned criteria.

Pest Assessment Method 2 – Inspection of a Crop

The objective of Pest Assessment Method 2, inspection of a crop, is to determine whether the percentage of stand loss in a corn or soybean crop that was caused by one or more of the pests set out in this Guideline meets or exceeds the stand loss threshold set out in this Guideline for that crop.

In particular, the steps set out for Pest Assessment Method 2 shall be performed to determine whether:

- damage to corn plants was caused by one or more of the following pests: grubs, wireworms, seedcorn maggots or corn rootworms; or

- damage to soybean plants was caused by one or more of the following pests: grubs, wireworms, seedcorn maggots or bean leaf beetles.

The following steps must be taken in order to perform Pest Assessment Method 2::

1. The first step in Pest Assessment Method 2 is to identify an area on the farm property on which corn or soybean crops were planted with seed that is **not** a Class 12 pesticide in which stand loss is detected. Identify at least one plot that is not greater than 100 acres (40.5 ha) within that area.
2. The second step in Pest Assessment Method 2 is to identify, for at least one plot identified in Step 1,
 - at least five locations in which to inspect for stand loss ("stand loss location"); and
 - at least five locations in which there is no stand loss evident ("non-stand loss location").

The above-mentioned locations must satisfy the following criteria:

- i. The number of non-stand loss locations identified in the plot must be the same as the number of stand loss locations identified in the plot.
 - ii. Each location must be at least 10 metres away in all directions from any other location in any plot.
 - iii. The size of each location in a plot planted with corn shall be determined using the Row Plant Technique set out in Appendix 1 of this Guideline.
 - iv. The size of each location in a plot planted with soybean shall be determined using either the Row Plant Technique or the Quadrat Technique set out in Appendix 1 of this Guideline.
3. The third step in Pest Assessment Method 2 is to inspect the corn or soybean crop in each stand loss location identified in Step 2 for stand loss. If stand loss is found, determine if it was caused in each location by one or more of the following pests:
 - grubs, wireworms, seedcorn maggots or corn rootworms in corn plants; or
 - grubs, wireworms, seedcorn maggots or bean leaf beetles in soybean plants.

The rationale for determining which type of pests caused the stand loss shall be recorded.

4. If the stand loss was caused by one or more of the pests mentioned in Step 3, the fourth step in Pest Assessment Method 2 is to determine and record the average number of unaffected plants per acre in the stand loss locations identified in Step 2. To do so, count and record the number of plants that are unaffected, i.e. not stunted, damaged or dead, in each stand loss location identified in Step 2 using the counting methods set out below. Average the number of unaffected plants per acre/ha determined for each stand loss location in the plot and record. Counting shall be performed using the following techniques:
 - Corn plants shall be counted using the Row Plant Technique set out in Appendix 1 of this Guideline.
 - Soybean plants shall be counted using either the Row Plant Technique or the Quadrat Technique set out in Appendix 1 of this Guideline.
5. The fifth step in Pest Assessment Method 2 is to determine and record the average number of plants per acre/ha in the non-stand loss locations identified in Step 2.
 - For corn, this may be accomplished by using the Row Plant Technique mentioned in Step 4 or by using the planting rate used to plant the corn crop.
 - For soybean, this shall be accomplished using the same counting technique that was used to count the number of unaffected plants per acre/ha in stand loss locations in Step 4.

If a counting technique is used, count and record the number of unaffected plants in each non-stand loss location identified in Step 2 and average and record the number of unaffected plants per acre/ha determined for each non-stand loss location in the plot.

6. The sixth step in Pest Assessment Method 2 is to calculate and record the percentage of stand loss at the farm property in accordance with the following equation:

$$[(X - Y) \div X] \times 100 = \% \text{ Stand Loss}$$

Where,

X is the average number of plants per acre/ha in the non-stand loss locations in the plot as determined in Step 5; and

Y is the average number of plants per acre/ha in the stand loss locations in the plot as determined in Step 4.

This step will provide:

For corn: The percentage of stand loss caused by grubs, wireworms, seedcorn maggots or corn rootworms at the farm property

For soybean: The percentage of stand loss caused by grubs, wireworms, seedcorn maggots or bean leaf beetles at the farm property.

If the percentage of stand loss in a corn crop or soybean crop calculated in Step 6 meets or exceeds a stand loss threshold for that crop set out in this Guideline, a Class 12 pesticide may be used at the farm property in an area that meets the following criteria:

- One assessment number applies to all of the land in the area.
- The area includes an area in which the percentage of stand loss calculated in Step 6 meets or exceeds one of the following **stand loss thresholds**:
 - i. 15 % if the stand loss calculated is in respect of a corn crop; or
 - ii. 30 % if the stand loss calculated is in respect of a soybean crop.

An area that meets the above-mentioned criteria may be sketched as an **application area** (i.e. an area of land in or on which a Class 12 pesticide is intended to be used) in a pest assessment report prepared for the purposes of section 8.2 of the Regulation. Please note that although an inspection for crop damage may have been conducted on a plot as large as 100 acres (40.5 ha), the application area sketched in the pest assessment report if a stand loss threshold has been met or exceeded may be any size that is greater than, equal to or less than 100 acres (40.5 ha) as long as the application area meets the above-mentioned criteria.

APPENDIX 1

Plant Counting Techniques

As mentioned above, there are two techniques that shall be used to count the number of plants in a stand loss location: (A) the Row Plant Technique, and (B) the Quadrat Technique. The steps for each technique are set out below.

A. Row Plant Technique

- 1) For row crops, measure the row width to determine the length of row that needs to be measured for the assessment.
- 2) Choose the row length that is set out in Table 1 opposite the row width measured in Step 1 of this counting Technique. For example, if a row width of 76 cm was measured, the length of the row in which to count plants would be 5.3 m.
- 3) Count the number of plants in the row length indicated in Table 1 to determine a plant population per thousandth of an acre (1/1000).
- 4) To calculate the number of plants per acre¹, multiply the number calculated in Step 3 by 1000.

Table 1 --Determining Number of Plants / Acre in Various Row Widths

Row Width		Length of Row Equal to 1/1000 acre	
centimetres	inches	metres	feet
38	15	10.6	34 ft. 10 in.
51	20	8.0	26 ft. 1 in.
56	22	7.3	23 ft. 10 in.
71	28	5.7	18 ft. 8 in.
76	30	5.3	17 ft. 5 in.
81	32	5.0	16 ft. 4 in.
86	34	4.7	15 ft. 5 in.
91	36	4.4	14 ft. 6 in.
97	38	4.2	13 ft. 9 in.

¹ To calculate the number of plants per hectare, multiply the number of plants in the length of row by 2.47 and then by 1000.

B. Quadrat Technique

- 1) Count the number of plants within a hoop or square frame of dimensions set out in Table 2.
- 2) Multiply the number of plants counted within the hoop or square frame by the factor set out in Column 3 opposite the inside diameter of the hoop or inside dimension of the frame used for the count set out in Column 1 of Table 2 to determine plant population per hectare or acre.

Table 2--Determining Number of Plants per Acre/Hectare

Column 1	Column 2	Column 3	
Inside Diameter of Hoop in Centimetres (inches)	Area in m ² (ft ²)	Factor by Which to Multiply the Number of Plants within the Hoop/Square to Equal:	
		Plants per Hectare	Plants per Acre
91 (36)	0.65 (7.0)	15,385	6,165
84 (33)	0.55 (6.0)	18,182	7,334
76 (30)	0.45 (4.9)	22,222	8,874
69 (27)	0.37 (4.0)	27,027	10,956
61 (24)	0.29 (3.2)	34,483	13,865
Inside Dimensions of Square Frame in Centimetres (Inches)			
50 x 50 (20 x 20)	0.25 (2.7)	40,000	16,133
100 x 100(40 x40)	1.00 (11.1)	10,000	3,924

